

AMENDMENTS

In the claims:

Please amend claims 13-27 as follows:

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13. (Twice Amended) A process for writing a Bragg grating in a transparent substrate, the Bragg grating forming a spectral filter with regard to a light wave that passes through it, the process comprising:

generating an interference pattern between two light beams with the same wavelength and coherent with each other but with angular offset in the substrate; and

writing said interference pattern to the substrate, in the form of a modulation of the refraction index of the transparent substrate, with a phase plate having an adjustable position and orientation during said writing,

wherein said phase plate divides at least one of said light beams into at least two sub-beams, creates a phase shift between said at least two sub-beams, and records a corresponding phase shift in the Bragg grating.

14. (Twice Amended) The process according to claim 13, wherein a separating plate divides a main light beam into said two light beams.

15. (Twice Amended) The process according to claim 13, wherein a prism divides a main light beam into said two light beams.

16. (Twice Amended) The process according to claim 13, wherein the position and orientation of said phase plate is modified with time.

17. (Twice Amended) An apparatus for writing a Bragg grating in a substrate, said apparatus comprising:

means for generating an interference pattern between two light beams with the same wavelength and coherent with each other but with angular offset at the substrate;

at least one phase plate dividing at least one of said light beams into at least two sub-beams to create a phase shift between said at least two sub-beams, said phase plate writing said interference pattern in the substrate in the form of modulation of the refraction index of the substrate; and

means for adjusting during said writing the position of said phase plate, said means for adjusting having at least two degrees of freedom, one being angular degree of freedom provided for adjustment of the value of the phase shift, and the other being a translation degree of freedom provided for adjustment of the position of the phase shift in the light beam formed by the two sub-beams.

18. (Twice Amended) An apparatus according to claim 17 further comprising interferometric means with two or three mirrors for writing the interference pattern according to an amplitude separation configuration, said interferometric means coupled to said means for adjusting.

19. (Twice Amended) An apparatus according to claim 17 further comprising interferometric means with a prism for writing the interference pattern according to a wave front separation configuration, said interferometric means coupled to said means for adjusting.

20. (Once Amended) The process according to claim 13, wherein the phase shift between said at least two sub-beams is substantially equal to  $\pi$ .

21. (Twice Amended) A process for erasing a previously written Bragg grating in a substrate comprising:

positioning a phase plate to create an interference pattern with a relative phase difference of  $\pi$  over the previously written Bragg grating; and

writing said interference pattern in the substrate with said phase plate to erase the previously written Bragg grating,

wherein the previously written Bragg grating was created by:

generating said interference pattern between two light beams with the same wavelength and coherent with each other but with angular offset in the substrate;

and

writing said interference pattern to the substrate, in the form of a modulation of the refraction index of the transparent substrate, with said phase plate having an adjustable position and orientation during said writing,

said phase plate divides at least one of said light beams into at least two sub-beams, creates a phase shift between said at least two sub-beams, and records a corresponding phase shift in the Bragg grating.

22. (Twice Amended) A process for forming a Fabry-Perot cavity comprising:

writing two successive Bragg gratings at a spacing equal to the length of the cavity,

wherein each Bragg grating is written by:

generating an interference pattern between two light beams with the same wavelength and coherent with each other but with angular offset; and

writing said interference pattern to a substrate, in the form of a modulation of the refraction index of said substrate, with a phase plate having an adjustable position and orientation during said writing,

said phase plate divides at least one of said light beams into at least two sub-beams, creates a phase shift between said at least two sub-beams, and generates a corresponding phase shift in the Bragg grating.

23. (Twice Amended) A process for writing a Faber-Bragg grating comprising:

positioning a phase plate to create an interference pattern with a phase difference of  $\pi$  over the previously written Bragg grating;

writing said interference pattern in the substrate with said phase plate to erase the previously written Bragg grating;

writing a new interference pattern in the substrate over the previously written Bragg grating;

wherein the previously written Bragg grating was created by:

generating said interference pattern between two light beams with the same wavelength and coherent with each other but with angular offset in the substrate; and

writing said interference pattern to the substrate, in the form of a modulation of the refraction index of the transparent substrate, with said phase plate having an adjustable position and orientation during said writing,

said phase plate divides at least one of said light beams into at least two sub-beams, creates a phase shift between said at least two sub-beams, and records a corresponding phase shift in the Bragg grating

24. (Twice Amended) The process according to claim 23, wherein the position of the phase plate is being displaced by a programmable movement.

25. (Once Amended) The process according to claim 13, wherein the substrate is an optical fiber.

26. (Once Amended) The process according to claim 23, wherein the Bragg grating is an apodized Bragg grating.

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27. (Once Amended) An apparatus according to claim 17 further comprising  
interferometric means with a Lloyd folded mirror for writing the interference pattern  
according to a wave front separation configuration, said interferometric means coupled to  
said means for adjusting.

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